

```

PPPPPPPPPPPPP  AAAA        SSSSSSSSSSSS  RRRRRRRRRRRR  TTTTTTTTTTTTTTTT  LLL
PPPPPPPPPPPPP  AAAA        SSSSSSSSSSSS  RRRRRRRRRRRR  TTTTTTTTTTTTTTTT  LLL
PPPPPPPPPPPPP  AAAA        SSSSSSSSSSSS  RRRRRRRRRRRR  TTTTTTTTTTTTTTTT  LLL
PPP    PPP  AAA  AAA  SSS  RRR  RRR  TTT  LLL
PPP    PPP  AAA  AAA  SSS  RRR  RRR  TTT  LLL
PPP    PPP  AAA  AAA  SSS  RRR  RRR  TTT  LLL
PPP    PPP  AAA  AAA  SSS  RRR  RRR  TTT  LLL
PPP    PPP  AAA  AAA  SSS  RRR  RRR  TTT  LLL
PPP    PPP  AAA  AAA  SSS  RRR  RRR  TTT  LLL
PPP    PPP  AAA  AAA  SSS  RRR  RRR  TTT  LLL
PPPPPPPPPPPPP  AAA  AAA  SSSSSSSSS  RRRRRRRRRRRR  TTT  LLL
PPPPPPPPPPPPP  AAA  AAA  SSSSSSSSS  RRRRRRRRRRRR  TTT  LLL
PPPPPPPPPPPPP  AAA  AAA  SSSSSSSSS  RRRRRRRRRRRR  TTT  LLL
PPP  AAAAAAA  AAA  SSS  RRR  RRR  TTT  LLL
PPP  AAAAAAA  AAA  SSS  RRR  RRR  TTT  LLL
PPP  AAAAAAA  AAA  SSS  RRR  RRR  TTT  LLL
PPP  AAA  AAA  SSSSSSSSSSS  RRR  RRR  TTT  LLL
PPP  AAA  AAA  SSSSSSSSSSS  RRR  RRR  TTT  LLL
PPP  AAA  AAA  SSSSSSSSSSS  RRR  RRR  TTT  LLL

```

```

PPPPPPPP  AAAA    SSSSSSSS  EEEEEE    XX    XX  PPPPPPPP  000000
PPPPPPPP  AAAA    SSSSSSSS  EEEEEE    XX    XX  PPPPPPPP  000000
PP        PP  AA  AA  SS    EE    XX    XX  PP    PP  00  00
PP        PP  AA  AA  SS    EE    XX    XX  PP    PP  00  00
PP        PP  AA  AA  SS    EE    XX    XX  PP    PP  00  00
PP        PP  AA  AA  SS    EE    XX    XX  PP    PP  00  00
PPPPPPPP  AA  AA  SSSSSS  EEEEEE    XX    XX  PPPPPPPP  00  00
PPPPPPPP  AA  AA  SSSSSS  EEEEEE    XX    XX  PPPPPPPP  00  00
PP        AAAA    SS    EE    XX    XX  PP    00  00
PP        AAAA    SS    EE    XX    XX  PP    00  00
PP        AA  AA  SS    EE    XX    XX  PP    00  00
PP        AA  AA  SS    EE    XX    XX  PP    00  00
PP        AA  AA  SSSSSS  EEEEEE    XX    XX  PP    000000
PP        AA  AA  SSSSSS  EEEEEE    XX    XX  PP    000000

```

(2) 46  
(3) 75  
(4) 114  
(5) 153  
(6) 192

DECLARATIONS

PAS\$EXPO\_F - Return binary exponent of F-floating  
PAS\$EXPO\_D - Return binary exponent of D-floating  
PAS\$EXPO\_G - Return binary exponent of G-floating  
PAS\$EXPO\_H - Return binary exponent of H-floating

```
0000 1 .TITLE PAS$EXPO - Return binary exponent of floating values
0000 2 .IDENT /1-001/ ; File: PASEXPO.MAR Edit: SBL1001
0000 3 :
0000 4 :
0000 5 :*****+
0000 6 :*
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0000 24 :*
0000 25 :*
0000 26 :*****+
0000 27 :*
0000 28 :*
0000 29 :++
0000 30 :* FACILITY: Pascal Language Support
0000 31 :*
0000 32 :* ABSTRACT:
0000 33 :*
0000 34 :* This module contains four routines which return the binary exponent
0000 35 :* of a floating value for each of the four floating data types.
0000 36 :*
0000 37 :* ENVIRONMENT: Runs at any access mode, AST Reentrant
0000 38 :*
0000 39 :* AUTHOR: Steven B. Lionel, CREATION DATE: 4-Nov-1980
0000 40 :*
0000 41 :* MODIFIED BY:
0000 42 :*
0000 43 :* 1-001 - Original. SBL 4-Nov-1980
0000 44 :--
```

```
0000 46 .SBTTL DECLARATIONS
0000 47 :
0000 48 : LIBRARY MACRO CALLS:
0000 49 :
0000 50 : NONE
0000 51 :
0000 52 : EXTERNAL DECLARATIONS:
0000 53 :
0000 54 .DSABL GBL ; Force all external symbols to be declared
0000 55 : NONE
0000 56 :
0000 57 : MACROS:
0000 58 :
0000 59 : NONE
0000 60 :
0000 61 : EQUATED SYMBOLS:
0000 62 :
0000 63 : NONE
0000 64 :
0000 65 : OWN STORAGE:
0000 66 :
0000 67 : NONE
0000 68 :
0000 69 : PSECT DECLARATIONS:
0000 70 :
00000000 71 .PSECT _PASS$CODE PIC, USR, CON, REL, LCL, SHR, -
0000 72 : EXE, RD, NOWRT, LONG
0000 73 :
```

0000 75 .SBTTL PAS\$EXPO\_F - Return binary exponent of F\_floating  
0000 76 :++  
0000 77 : FUNCTIONAL DESCRIPTION:  
0000 78 :  
0000 79 : This routine returns the unbiased binary exponent of an F\_floating value.  
0000 80 :  
0000 81 : CALLING SEQUENCE:  
0000 82 :  
0000 83 : Result.wl.v = PAS\$EXPO\_F (Single.rf.r)  
0000 84 :  
0000 85 : FORMAL PARAMETERS:  
0000 86 :  
0000 87 : Single - F\_floating argument  
0000 88 :  
0000 89 : IMPLICIT INPUTS:  
0000 90 :  
0000 91 : NONE  
0000 92 :  
0000 93 : IMPLICIT OUTPUTS:  
0000 94 :  
0000 95 : NONE  
0000 96 :  
0000 97 : ROUTINE VALUE:  
0000 98 :  
0000 99 : The unbiased binary exponent of the argument  
0000 100 :  
0000 101 : SIDE EFFECTS:  
0000 102 :  
0000 103 : SSS\_ROPRAND - if the argument is a reserved operand  
0000 104 :  
0000 105 :--  
0000 106 .ENTRY PAS\$EXPO\_F, ^M<> ; Entry point  
0000 107  
0002 108  
0005 109  
0008 110  
000B 111  
0012 112  
TSTF #4(AP) ; Test for reserved operand  
EXTZV #7, #8, #4(AP), R0 ; Fetch exponent  
SUBL2 #128, R0 ; Unbias exponent  
RET ; End of routine PAS\$EXPO\_F

50 04 BC 08 07 53 0002 109  
50 00000080 8F C2 000B 111  
04 0012 112

```

0013 114 .SBTTL PAS$EXPO_D - Return binary exponent of D_floating
0013 115 :+
0013 116 : FUNCTIONAL DESCRIPTION:
0013 117 :
0013 118 : This routine returns the unbiased binary exponent of a D_floating value.
0013 119 :
0013 120 : CALLING SEQUENCE:
0013 121 :
0013 122 : Result.wl.v = PAS$EXPO_D (Double.rd.r)
0013 123 :
0013 124 : FORMAL PARAMETERS:
0013 125 :
0013 126 : Double - D_floating argument
0013 127 :
0013 128 : IMPLICIT INPUTS:
0013 129 :
0013 130 : NONE
0013 131 :
0013 132 : IMPLICIT OUTPUTS:
0013 133 :
0013 134 : NONE
0013 135 :
0013 136 : ROUTINE VALUE:
0013 137 :
0013 138 : The unbiased binary exponent of the argument
0013 139 :
0013 140 : SIDE EFFECTS:
0013 141 :
0013 142 : SSS_ROPRAND - if the argument is a reserved operand
0013 143 :
0013 144 :--:
0013 145 :
0000 0013 146 .ENTRY PAS$EXPO_D, ^M<> : Entry point
0015 147 :
0015 148 TSTD #4(AP) : Test for reserved operand
0015 149 EXTZV #7, #8, #4(AP), R0 : Fetch exponent
0015 150 SUBL2 #128, R0 : Unbias exponent
0015 151 RET : End of routine PAS$EXPO_D

```

50 04 BC 04 BC 73 0015 148  
50 00000080 8F C2 001E 149  
04 04 0025 150  
04 0025 151

0026 153 .SBTTL PASSEXPO\_G - Return binary exponent of G\_floating  
0026 154 :++  
0026 155 : FUNCTIONAL DESCRIPTION:  
0026 156 :  
0026 157 : This routine returns the unbiased binary exponent of a G\_floating value.  
0026 158 :  
0026 159 : CALLING SEQUENCE:  
0026 160 :  
0026 161 : Result.wl.v = PASSEXPO\_G (Double.rg.r)  
0026 162 :  
0026 163 : FORMAL PARAMETERS:  
0026 164 :  
0026 165 : Double - G\_floating argument  
0026 166 :  
0026 167 : IMPLICIT INPUTS:  
0026 168 :  
0026 169 : NONE  
0026 170 :  
0026 171 : IMPLICIT OUTPUTS:  
0026 172 :  
0026 173 : NONE  
0026 174 :  
0026 175 : ROUTINE VALUE:  
0026 176 :  
0026 177 : The unbiased binary exponent of the argument  
0026 178 :  
0026 179 : SIDE EFFECTS:  
0026 180 :  
0026 181 : SSS\_ROPRAND - if the argument is a reserved operand  
0026 182 :  
0026 183 :--  
0026 184 :  
0000 0026 185 .ENTRY PASSEXPO\_G, ^M<> ; Entry point  
0028 186 :  
50 04 BC 0B 04 53FD 0028 187 TSTG a4(AP) ; Test for reserved operand  
50 00000400 8F C2 002C 188 EXTZV #4 #11, a4(AP), R0 ; Fetch exponent  
04 0032 189 SUBL2 #1024, R0 ; Unbias exponent  
04 0039 190 RET ; End of routine PASSEXPO\_G

003A 192 .SBTTL PAS\$EXPO\_H - Return binary exponent of H\_floating  
 003A 193 :++  
 003A 194 : FUNCTIONAL DESCRIPTION:  
 003A 195  
 003A 196 : This routine returns the unbiased binary exponent of an H\_floating value.  
 003A 197  
 003A 198 : CALLING SEQUENCE:  
 003A 199  
 003A 200 : Result.wl.v = PAS\$EXPO\_H (Quad.rh.r)  
 003A 201  
 003A 202 : FORMAL PARAMETERS:  
 003A 203  
 003A 204 : Quad - H\_floating argument  
 003A 205  
 003A 206 : IMPLICIT INPUTS:  
 003A 207  
 003A 208 : NONE  
 003A 209  
 003A 210 : IMPLICIT OUTPUTS:  
 003A 211  
 003A 212 : NONE  
 003A 213  
 003A 214 : ROUTINE VALUE:  
 003A 215  
 003A 216 : The unbiased binary exponent of the argument  
 003A 217  
 003A 218 : SIDE EFFECTS:  
 003A 219  
 003A 220 : SSS\_ROPRAND - if the argument is a reserved operand  
 003A 221  
 003A 222 :--  
 003A 223  
 0000 003A 224 .ENTRY PAS\$EXPO\_H, ^M<> ; Entry point  
 003C 225  
 50 04 BC 04 BC 73FD 003C 226 TSTH #4(AP) ; Test for reserved operand  
 50 00004000 8F C2 0040 227 EXTZV #0, #15, #4(AP), R0 ; Fetch exponent  
 04 04 046 0046 228 SUBL2 #16384, R0 ; Unbias exponent  
 004D 229 RET ; End of routine PAS\$EXPO\_H  
 004E 230  
 004E 231 .END ; End of module PAS\$EXPO

## PASSEXPO Symbol table

- Return binary exponent of floating val 16-SEP-1984 01:24:54 VAX/VMS Macro V04-00  
6-SEP-1984 11:30:34 [PASRTL.SRC]PASEXPO.MAR;1

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(6)

PA  
1-

PASSEXPO-D	00000013	RG	01
PASSEXPO-F	00000000	RG	01
PASSEXPO-G	00000026	RG	01
PASSEXPO-H	0000003A	RG	01

## ! Psect synopsis !

PSECT name

Allocation	PSECT No.	Attributes
00000000 ( 0.)	00 ( 0.)	NOPIC USR CON ABS LCL NOSHR NOEXE NORD NOWRT NOVEC BYTE
0000004E ( 78.)	01 ( 1.)	PIC USR CON REL LCL SHR EXE RD NOWRT NOVEC LONG

## ♦-----♦ . Performance indicators . ♦-----♦

Phase	Page faults	CPU Time	Elapsed Time
Initialization	10	00:00:00.09	00:00:00.70
Command processing	74	00:00:00.66	00:00:03.46
Pass 1	64	00:00:00.50	00:00:01.97
Symbol table sort	0	00:00:00.00	00:00:00.00
Pass 2	52	00:00:00.41	00:00:01.92
Symbol table output	2	00:00:00.01	00:00:00.01
Psect synopsis output	2	00:00:00.02	00:00:00.02
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	206	00:00:01.70	00:00:08.09

The working set limit was 750 pages

2491 bytes (5 pages) of virtual memory were used to buffer the intermediate code.

There were 10 pages of symbol table space allocated to hold 4 non-local and 0 local symbols.

231 source lines were read in Pass 1, producing 19 object records in Pass 2.

0 pages of virtual memory were used to define 0 macros.

-----  
! Macro library statistics !  
-----

Macro library name

## Macros defined

\$255\$DUA28:[SYSLIB]STARLET.MLB:2

0

0 GETS were required to define 0 macros.

There were no errors, warnings or information messages.

MACRO/ENABLE=SUPPRESSION/DISABLE=(GLOBAL,TRACEBACK)/LIS=LIS\$:PASEXPO/OBJ=OBJ\$:PASEXPO MSRC\$:PASEXPO/UPDATE=(ENHS:PASEXPO)

0294 AH-BT13A-SE  
VAX/VMS V4.0

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LIS

PASFAB  
LIS

PASFINDK  
LIS

PASFVINPU  
LIS

PASFIND2  
LIS

PASFVOUTP  
LIS

PASGET  
LIS

PASGOTO  
LIS

PASHALT  
LIS

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LIS

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LIS